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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,129	01/11/2006	Toshimi Nakamura	Q91344	8865
23373 7590 10/16/2008				
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2100 PENNSYLVANIA AVENUE, N.W.				
SUITE 800				
WASHINGTON, DC 20037				
EXAMINER				
SHABMAN, MARK A				
ART UNIT		PAPER NUMBER		
2856				
MAIL DATE		DELIVERY MODE		
10/16/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,129

**Applicant(s)**

NAKAMURA ET AL.

**Examiner**

MARK SHABMAN

**Art Unit**

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-35, 38 and 39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-35, 38 and 39 is/are allowed.
- 6) ☒ Claim(s) 16-22 is/are rejected.
- 7) ☐ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments with respect to claims 16-22 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 16-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant admitted prior art in view of Jacobs US Patent 3,538,746 (hereinafter referred to as Jacobs).

Regarding **claim 16**, figure 17 of the present application shows a "conventional leak detector" in a tank for detection of leaks within the tank itself. Item 110 is described as a liquid leak detector in paragraph [0003], thus reading on the "leak detector for detecting leakage of liquid stored in a tank" as claimed. As a tank leaks, the leak rate would be based on "fluctuation in a liquid level of the liquid". The tank shown in figure 17 can be seen to have a "top plate" and a "bottom plate" as claimed along with a perpendicular plate along the side connecting said top and bottom plates, which is interpreted as the "side plate" as claimed. The "top assembly" 112 of the leak detector

is attached to the "the top plate" to cover an opening provided therein, with the rest of the device extending inside the tank towards the bottom plate, perpendicular to the surface of the liquid LS2 within. The prior art does not disclose the bottom end of the leak detector being "detachably attached to the bottom plate or the "second end supported in the through opening in such a manner that the leak detector is movable in a direction substantially perpendicular to the surface of the liquid."

Jacobs discloses a leak detection method and apparatus for a storage tank which is seen in figure 1. The apparatus comprises a tubular member which is inserted into the tank through a stopper 18 at the top of the tank. The member is secured to the bottom of the tank by magnet 20 which allows for it to be held stationary during testing as described in column 3. This helps to measure more accurately when the tank bulges due to temperature or other environmental changes. Thus any change in the height of the tank would allow for the upper end of the leak detector to move relative to the top plate while the bottom end is "detachably attached" to the bottom plate. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Jacobs with those taught in the admitted prior art to further stabilize the support pipe seen in figure 17 to allow for more accurate readings, and to ensure that leak testing could be performed even at low fuel levels by extending the pipe to the bottom of the tank.

Regarding **claim 17**, the prior art teaches a flow rate sensor that operates by liquid passing through it. In order for liquid to pass through the flow rate measurement unit 111, the "inlet/outlet portion" would be near the bottom with the sensor below the

flow-rate measuring unit 111, reading on "near the bottom end through which the liquid flows in and out of the liquid detector." This further reads on "a flow rate measuring unit arranged near the liquid inlet/outlet portion" as claimed. As the flow rate measuring unit is located above the inlet/outlet portion, it is "toward the upper end". Since it measures the flow rate of the liquid which enters the inlet/outlet below, as the water level rises or falls the amount of water passing through the measuring unit corresponds to inlet/outlet portion, thus the measuring unit measures "an amount of flow of the liquid occurring through the liquid inlet/outlet portion". As can be seen in figure 17, the liquid level LS2 within the leak detector 110 corresponds to the liquid level of the tank itself LS1. The LS2 is described in paragraph [0003] as inside the leak detector. This liquid between the measuring unit 111 and the "upper end", is the "liquid retaining portion" as claimed. The liquid within this space has entered "through the liquid inlet/outlet portion."

Regarding **claim 18**, the bottom end of the detector in Jacobs is attached via a magnet as claimed.

Regarding **claim 19**, the stopper of Jacobs is not disclosed as being an "elastic member" as claimed. However, it was known in the art at the time of invention to use elastic supports such as rubber gaskets and washers to separate individual metal pieces in the manner claimed in order to form air-tight seals as would be needed to ensure no pressure leaks into the storage tank which would cause the leak detector to malfunction.

Regarding **claim 20**, the prior art shows a protective member surrounding the flow rate measuring unit 111. The disclosure of Jacobs describes the use of materials

which have little coefficient of expansion to help make the system more accurate. It would have been obvious to one of ordinary skill in the art at the time of invention to form the "protective member" from the same or similar metal as the tank to ensure that any temperature variations affecting the tank would likewise equally affect the member, thus yielding accurate results.

Regarding **claim 21**, it would have been obvious to one of ordinary skill in the art at the time of invention to have manufactured the protective member out of the same material as the tank, since both are metal and doing so would ensure a similar coefficient of expansion which would help produce accurate results as previously discussed.

Regarding **claim 22**, it would have been obvious to one of ordinary skill in the art at the time of invention to have included an "intermediate member" in the tank to which the magnet of the detector attaches to, thus allowing for the detector to attach to the same point within the tank each time it is inserted, ensuring its verticality.

***Allowable Subject Matter***

Claims 24-35 and 38-39 are allowed.

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK SHABMAN whose telephone number is (571)270-3263. The examiner can normally be reached on M-F 8:00am - 4:30pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. S./  
Examiner, Art Unit 2856  
/Hezron Williams/  
Supervisory Patent Examiner, Art Unit 2856